

Academic Technology Strategic Initiative Grant Final Report

June 9, 2008

PROJECT TITLE:

Bridging the gap between the PDA and Tablet in Healthcare: The Ultra Mobile Portable Computer at the bedside

INVESTIGATORS:

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AWARD:

\$24,500

Objectives and Strategies, and Revisions

The goal of the proposed project is to expose both junior and senior nursing students to an emerging technology which has great potential in the clinical setting. The project would engage students in the evaluation of both positive and negative aspects of the UMPC as a clinical tool in a two-part study, by comparing it to both the PDA and the Tablet PC in two different learning environments. The objective of the first part of the proposed study is to examine the UMPC compared with the PDA as learning tools. Both junior and senior nursing students will be assigned either a PDA or UMPC [loaded with the same medical/nursing databases] for use during the seven weeks of their first fall clinical placement. At the end of the seven weeks, each student will evaluate the assigned instrument as a learning tool using a modified version of the survey tool successfully developed for the 2005-2006 Professional Development grant awarded to Boston and Lowell. During the seven weeks of their second fall placement the students will then switch to using the other instrument and, again, evaluate it as a learning tool at the end of the placement.

The objective of the second part of the proposed study is to assess devices for ease of use and practicality at the bedside for collecting patient data and transferring it to the electronic medical record. The students will use the UMPC in place of the Tablet PC with the wireless EMR that was created in the nursing laboratory as part of the 2006-2007 Strategic Initiative grant. Students will evaluate the UMPC platform using a modification of the evaluation tool devised for the Tablet PC project.. The EMR portion is a bedside simulation carried out in the nursing laboratory, not in the hospital setting.

-Revision

This second part of the grant objective was not realized. The EMR used in the 2006 Strategic Grant had to be disconnected and stored for the duration of the reconstruction of the area and was not available for the spring semester. We continued with the fall semester plan of having students take the PDA and the UMPC into the clinical setting and evaluating them there. Comments on the Pro and Con of using the UMPC were compared to similar comments relating to the use of the Tablet PC from the previous grant.

- Strategies

The project was designed to expose nursing students to cutting edge technology applicable in the clinical setting. By utilizing the UMPC in the clinical setting as a bedside reference tool students learned how to employ different technologies to access information technology and evaluated the pros and cons of three different platforms for clinical applications.

As has occurred with the two PDA projects and the Tablet PC project, the technology purchased for this project will be available for future students during and after the grant period. Thus the outcome of the project will be employed and the equipment continues to be used in training future students to use state-of-the-art technology when they enter the clinical arena as nursing professionals. Over the past three years we have demonstrated success first with the PDAs and then the Tablet PCs, and this project continues the momentum with students and faculty to incorporate technology into nursing education. The project also lends itself to seeking future funding to expand the scale of using the UMPC in the clinical setting, while making the UMPC available for incorporation into current and future projects.

Activities

Funds were received on the Lowell campus at the beginning of July. Ten Ultra Mobile PCs were ordered from OQO Corporation, San Francisco, CA and 30 licenses for 5 medical/nursing databases from Skyscape Inc. Hudson, MA. UMPCs and licenses were received prior to the beginning of August and were prepared along with 15 Tungsten E2 model PDAs for the start of the fall semester. An additional 8 Tungsten C model PDAs were also updated and held in reserve for other nursing student use. John Callahan prepared and maintained the UMPC and PDAs throughout the grant cycle using the library and media centers facilities.

Nursing students in clinical rotations, supervised by co-PIs Koren and Campbell, were given either a Tungsten E2 PDA or OQO UMPC for their first seven week rotation. Students received the opposite device for the second rotation. IRB was applied for and granted to faculty. Students completed a survey at the end of each rotation which investigated the usability of each device as a learning tool.

During the fall semester two UMPCs were dropped resulting in functional damage. Both incidents were accidents while being used in clinical settings. No PDAs

failed from normal use. Both UMPCs have been repaired at OQO's repair center at additional cost to remaining grant funds.

Project Deliverables

Ten Ultra Mobile Portable PCs were purchased from OQO Corporation (www.Oqo.com). Each unit was loaded with five medical/nursing databases purchased from Skyscape Inc, Hudson MA. These UMPCs were incorporated along with the current PDAs into the learning environment of the fall and spring clinical placements. Clinical placements where the PDAs are currently used include: medical/surgical, obstetrics, pediatrics, and psychiatry. Evaluations were completed at the end of each seven week clinical rotation. These evaluations were used to develop presentations and on the utility of the UMPC as a clinical tool.

Dissemination of Results

Results of this project have been disseminated through the following:

- UMass sponsored IT Conferences in Boxborough, MA
- Presented at the 26th Annual International Nursing Computer and Technology Conference, Las Vegas, NV, June 4-7, 2008
- Article submission to a journal such as Computers Informatics Nursing is underway.

Assessment

It quickly became apparent that the UMPC was less effective at the point-of-care than the PDA. Issues included time for the unit to go from hibernate to full on, short battery life (note: the standard battery has a life of 2.5 hours, and extended battery with a life of 5.5 hours is available but was too costly to purchase for all the units), weight, bulky size. In normal operation the units were loud whenever the internal fan came on, was uncomfortably warm to the touch, and felt fragile when the keyboard and screen were slid open. The need for a special and separate stylus makes use of the OQOs more difficult in tablet mode. Most of the issues noted above were also drawbacks to the use of the Tablet PC at the bedside. The PowerPoint presentation used in Las Vegas is attached along with this report. The PDA seems to be the better tool for accessing information at the bedside. Although there may be a place for the UMPC in healthcare it appears not to be as a point-of-care reference tool where information is needed quickly. There are attractive features to the OQO which may help find a niche for this UMPC. One advantage of the UMPC is its wireless and Bluetooth capacity, and full MSWindows™ capability the UMPC may be a good platform for updating patient values at the bedside where speed of accessing the information is not necessary. Also, adding the extended battery would make the unit more useful during a clinical day with only a slight increase in weight. If the PDA seems too primitive to have multiple uses at the point of care, the full fledged UMPC seems to be too complicated to be of utility at the same location.

Future Investigations

One area we had hoped to evaluate was the time and accuracy of using the PDA, UMPC, Tablet PC and Books for finding information to solve a case study. We hope to be able to carry this out in the fall 2008 semester, as preparation of the cases took more time during the spring semester than expected and there was not time to run the assessment.

We also hope to be able to test the UMPC along with the Tablet PC as a means of updating the electronic medical record utilizing the equipment from the 2006 Tablet PC project.

Disposition of Funds

At this date there is approximately \$300.00 remaining after purchase of the UMPCs and databases. Some \$200 is needed to pay for the repairs for the two UMPCs that were accidentally dropped during the fall semester. The investigator would like to use remaining funds to purchase peripherals which may extend the OQO's potential. Any monies remaining after this is paid will be returned to the President's Office.

Comments

We have been fortunate to have had four successive projects funded through the grant program giving us the opportunity to expose nursing students to cutting edge technology at the point-of-care. Through these grants we have presented papers at four international nursing conferences, and published two articles in peer review nursing journals with a third in preparation. We look forward to submitting additional grant proposals in the future.

The grant program has been very effective in providing investigators funds with which to bring new and edgy technologies to campus. What has proven less effective has been the manner in which grant funds are deposited on campus. Campus purchasing agents demanded sole source justification for UMPC purchases and had to be persuaded to help rush the purchase at the start of the new fiscal year. A delay in the delivery of grant funded items would have prevented us from being ready to deploy the equipment in September. Also, the UMPC vendor refused to accept University purchase orders for repairs and additional items forcing investigators to use private funds to get OQOs repaired in a timely fashion. A suggestion to the ITC would be to allocate funds to a debit card through which all purchases could be made by investigators and relieve the purchasing officers of dealing with this once a year style transfer to university funds.

For additional questions please contact me at Patrick_Scollin@uml.edu

Thank you.



Patrick Scollin